WHAT IS CLAIMED IS:

1. A drive apparatus for a hybrid vehicle, the drive apparatus comprising:

an internal combustion engine;

a damper connected on one side thereof to a rear of the engine;

a motor-generator connected on one side thereof to another side of the damper, the motor-generator being capable of starting the engine;

a clutch connected on one side thereof to another side of the motor-generator;

a transmission connected to the internal combustion engine via the damper, the motor-generator, and the clutch; and

a starter motor connected to the damper, the starter motor being capable of starting the engine.

2. The drive apparatus as claimed in claim 1, the drive apparatus further comprising

a front and back selector mechanism via which the transmission connects to the clutch, and

a control system controlling a drive state of the motor-generator, the starter motor, an engagement state of the clutch, and a shift state of the transmission.

3. The drive apparatus as claimed in claim 1, wherein the clutch engages by electromagnetic force, and a dividing wall of magnetic material is disposed between the motor-generator and the clutch.

4. The drive apparatus as claimed in claim 3, wherein the clutch comprises a pilot clutch of small diameter which engages by electromagnetic force, a cam mechanism which changes engagement force of the pilot clutch into axial-direction thrust, and a main clutch of large diameter which is made to engage by the axial-direction thrust.

5. The drive apparatus as claimed in claim 1, wherein the motor-generator comprises a rotor, an outer diameter of the rotor being greater than respective outer diameters of the clutch and the damper, the motor-generator being disposed between the damper and the clutch.

6. The drive apparatus as claimed in claim 2, wherein the control system comprises

a vehicle speed sensor which detects whether the vehicle is stopped,

a brake sensor which detects a depressed state of a brake pedal, and

an oil temperature sensor which detects an oil temperature of oil in the transmission,

the control system executing idle-stop control to stop the engine when the vehicle is stopped, the brake pedal is depressed, and the oil temperature is within a predetermined range indicative that oil viscosity is optimal for restarting the engine with the motor-generator, idle-stop control again starting the engine when the brake pedal has been released,

the control system starting the engine with the starter motor during normal engine starting as well as when the oil temperature is outside the predetermined range, the control system starting the engine with the motor-generator only when a command signal to start the engine has been sent by idle-stop control.

7. The drive apparatus as claimed in claim 6, wherein the control system comprises a first control unit and a second control unit,

the first control unit sending a flag signal to the second control unit after having determined that the oil temperature is within the predetermined range,

the second control unit executing idle-stop control after having received the flag signal and also after having determined that the vehicle is stopped and the brake pedal is depressed,

the second control unit again starting the engine when the brake pedal has been released.

8. The drive apparatus as claimed in claim 3, wherein the motor-generator is supported on an input shaft which is joined to a clutch drum of the clutch as an integral body, the input shaft being supported by the dividing wall via a bearing.

9. The drive apparatus as claimed in claim 8, wherein a tip end of the input shaft is extended so as to be disposed within and supported by an end of the output shaft of the engine via a bearing.

10. The drive apparatus as claimed in claim 1, wherein the motor-generator comprises a stator which overlaps the clutch and the damper in the radial direction around the respective outer circumferences thereof.

11. The drive apparatus as claimed in claim 6, wherein the control system comprises a transmission control unit and a hybrid control unit, the transmission control unit controlling the shift state of a continuously variable transmission,

the transmission control unit receiving signals from the oil temperature sensor indicative of the oil temperature, the transmission control unit sending a flag signal to the hybrid control unit when the oil temperature is within the predetermined range,

the hybrid control unit executing idle-stop control to stop the engine after having received the flag signal, a signal from the vehicle speed sensor indicative that the vehicle is stopped, and a signal from the brake sensor indicative that the brake pedal is depressed,

the hybrid control unit ending idle-stop control by sending a signal to the motor-generator to start the engine after receiving a signal from the brake sensor indicative that the brake pedal is released.

12. The drive apparatus as claimed in claim 1, wherein the damper further comprises a ring gear disposed on an outer circumference thereof, the ring gear meshing with the starter motor.

13. A drive apparatus for a vehicle, the vehicle comprising an engine and a transmission, the drive apparatus comprising:

a battery;

damping means for reducing transmitted vibration, the damping means being disposed behind the engine;

restarting means for restarting the engine under a predetermined set of conditions, the restarting means also serving to charge the battery, the restarting means being disposed behind the damping means;

engaging means for allowing or interrupting power flow from the engine, the engaging means being disposed behind the restarting means;

normal starting means for starting the engine under conditions other than the predetermined set of conditions; and

control means for controlling the engine, the normal starting means, the restarting means, the engaging means, and the transmission.

14. The drive apparatus as claimed in claim 13, wherein the engaging means comprises a magnetic clutch, and the drive apparatus further comprises preventative means for preventing the restarting means from electromagnetically influencing the magnetic clutch, the magnetic clutch comprising

an electromagnet,

a pilot clutch which is made to engage by the electromagnet, and

a main clutch larger than the pilot clutch, the main clutch being made to engage under applied axial-direction thrust

which has been transformed from engagement force of the pilot clutch, engagement force of the pilot clutch being transformed by a torque cam mechanism.

15. The drive apparatus as claimed in claim 13, wherein the control means comprises

vehicle speed detection means for detecting a speed of the vehicle,

brake detection means for detecting a depressed state of a brake pedal, and

oil temperature detection means for detecting the temperature of oil in the transmission,

the control means executing idle-stop control to stop the engine when the vehicle is stopped, the brake is depressed, and the oil temperature is within a predetermined range where oil viscosity is optimal for starting the engine with the restarting means, the engine being restarted when the brake pedal is released,

the engine being started by the restarting means instead of the normal starting means only after idle-stop control has been executed.

16. The drive apparatus as claimed in claim 13, wherein an input shaft is supported via a bearing by the preventative means, the input shaft both supporting the restarting means and forming an integral body with a clutch drum of the engaging means, the damping means being joined at one end thereof to the input shaft and at another end thereof to an output shaft of the engine.

17. The drive apparatus as claimed in claim 16, wherein the input shaft is supported at a tip end thereof via a bearing within the output shaft of the engine, the input shaft thereby being supported at two locations.

18. A drive system for a hybrid vehicle, the hybrid vehicle comprising an engine, and a clutch which allows or interrupts transmission of power from the engine to a transmission, the drive system comprising:

a motor-generator which is connected from a rear thereof to the transmission, the motor-generator being both capable of driving the engine as a starter motor and of generating electrical power;

a damper which is joined at one end thereof via an elastic member thereof to an input shaft which supports the motor-generator and at another end thereof to an output shaft of the engine;

a starter motor which is connected to the engine; and

a control system which detects a speed of the vehicle, a state of a brake switch, and a temperature of oil in the transmission, and which determines execution of an idle-stop function to temporarily stop the engine,

the control system executing the idle-stop function if a set of idle-stop conditions including the vehicle speed being 0 km/h, the brake switch being in an ON state, and the oil temperature being within a predetermined range are met,

the engine being started with the motor-generator when the brake pedal is released during execution of the idle-stop function.

19. The drive system as claimed in claim 18, wherein the clutch comprises a main clutch which engages by an electromagnetically-controlled pilot clutch, a wall of magnetic material being disposed between the clutch and the motor generator.

20. The drive system as claimed in claim 18, wherein the control system also detects a range of the vehicle and a steer angle, the set of idle-stop conditions also including the range of the vehicle not being in the R range and the steer angle being 0 degrees.